North Carolina State Univ. funding by PMUSA

NCSU

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HEADLINE: Tobacco giant funds mapping

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When Philip Morris USA agreed to give N.C. State University scientists $ 17.6 million to map the genes in tobacco plants, the company bought access to any breakthroughs it finds useful.

The nation's largest cigarette maker will share licenses to any patents generated by the mapping study. Philip Morris also gets first dibs on negotiating exclusive licenses.

No one can guarantee that identifying genes will yield new, blockbuster tobacco products. But the cigarette industry clearly sees commercial promise in tobacco's genetic blueprint.

"This is one of the many tools in the toolbox that will get us where we want to go," Philip Morris spokeswoman Jennifer Golisch said.

One state cigarette maker already is diving in. Vector Tobacco, based outside Roxboro, is on the verge of launching a new brand of ultra-low nicotine smokes made with genetically altered leaf invented at NCSU in the 1990s.

By the end of the month, Vector is to introduce Quest, cigarettes with three increasingly lower nicotine levels, in seven northern states. Quest's very existence can be traced to a NCSU genetics lab.

In the 1980s, Mark Conkling, then a N.C. State plant geneticist, grew fascinated with a bunch of genes that seemed active only in the roots of tobacco. In time he focused on one gene: NiQPT1. It plays a key role in producing nicotine, a natural pesticide that normally moves from the plant's roots to its leaves.

In the 1990s, a N.C. State plant breeder approached Conkling about a small New York company's interest in breeding tobacco without nicotine. Traditional breeding would take years. Instead,

Conkling's lab used an altered form of the gene to bio-engineer a new plant with nearly no nicotine. The small firm licensed the technology.

In time, Vector's parent company licensed the technique. Conkling went to work for Vector. And Quest went into development.

"Tobacco is easy to genetically modify," Conkling said. "It's one of the easiest plants to add genes to."

Philip Morris has said it wants to make less-dangerous cigarettes, possibly using genetic engineering. But, citing "business proprietary" reasons, the company won't discuss specific products it envisions from research at N.C. State or elsewhere, Golisch said.

H&R Block Financial Analyst Kelly Capaldi, who watches the tobacco industry, says all cigarette companies would be more likely to make products with genetically altered leaf if giant Philip Morris did. "If they ever released a product, you'd see copycats," she said.

Now vice president of genetics research at Vector Tobacco, Conkling said understanding all genes active in tobacco opens up new avenues for the industry.

Scientists know a lot about some of the scores of carcinogenic chemicals in tobacco smoke. With genetic re-engineering, they may be able to reduce their production, Conkling said.

Genetic tinkering could make tobacco plants more resistant to pests or easier to shred, Conkling said. Biotechnology gurus still believe genetically altered tobacco could be used to grow new products to open new markets to tobacco farmers.

"There are a number of possibilities out there," Conkling said.

Obstacles abound, too.

Some tobacco farmers have rejected farming bio-engineered tobacco, in part because European markets don't like those crops.

Early on, Vector executives said they saw Quest as a smoking-cessation aid. But Vector can't market Quest 1, 2 and 3 as such without FDA approval. Vector can't seek that approval until it has evidence the product is safe and effective.

Instead, Vector is pitching Quest as a product that can help smokers "step down" from nicotine. And it hopes the brand will be more successful than its first and not-yet successful venture: Omni.

Vector Tobacco is a sister company to Liggett Group, the former downtown Durham company that now makes mostly discount cigarettes in Mebane. The company was launched to use science to develop less risky cigarettes.

In 2001, Vector launched Omni, a cigarette advertised as a less-carcinogenic smoke due to some chemical adjustments and a newfangled filter.It hasn't sold well.

Vector Tobacco won't give out sales numbers. But it says its efforts to introduce and sell "potentially" reduced risk cigarettes lost $ 20.2 million in the third quarter of 2002.

Still, Vector is moving on Quest.

"Quest offers smokers a new alternative and demonstrates the increasing role that technology has on the marketplace," said James Taylor, senior vice president of marketing for Liggett Vector brands.

Only time -- and sales numbers -- will tell.